Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A method for motion estimation for use in encoding a picture in a moving pictures sequence wherein data representing the picture in the sequence comprises a plurality of data blocks, the method comprising the steps of:

selecting a group of related data blocks from the plurality of data blocks of the picture;

for each data block in the selected group, obtaining a corresponding block motion vector from a previously processed picture in the moving pictures sequence;

determining a primary global motion vector for the selected group from all of the corresponding block motion vectors;

classifying the block motion vectors from the selected group into a plurality of sub-groups;

determining a plurality of secondary global motion vectors corresponding to the respective sub-groups from the block motion vectors classified in the respective sub-groups; and

selecting the primary and/or at least one of the secondary global motion vectors for use in defining one or more search windows for each block in the selected group to enable block matching with a reference picture.

2. (Original) A method as claimed in claim 1, wherein the block motion vectors from the selected group are classified into the sub-groups according to spatial clustering of the block motion vectors.

3. (Original) A method as claimed in claim 1, wherein the primary and secondary global motion vectors are computed from an average of the block motion vectors within the respective corresponding group or sub-group.

4. (Original) A method as claimed in claim 1, including determining a match between each block in the selected group and a matching-block in the one or more search windows for that block in the reference picture, and determining a computed motion vector between each block in the selected group and its matching block.

5. (Original) A method as claimed in claim 4, including storing the computed motion vector for each block for use as a block motion vector for processing subsequent pictures in the moving pictures sequence.

6. (Original) A method as claimed in claim 5, including generating a computed motion vector for each block in the picture and determining a maximum offset vector from the largest of the computed motion vectors, and using the maximum offset vector to select a variable length coding level for the computed motion vectors for the picture.

7. (Original) A method as claimed in claim 1, including selecting and performing one of a plurality of motion estimation and search schemes based on selected characteristics of the primary and secondary global motion vectors, the plurality of motion estimation and search schemes employing various combinations of the global motion vectors and matching-block search window schemes.

8. (Previously Presented) A method for encoding moving pictures data from a sequence of moving pictures in which each picture in the sequence is represented by a plurality of data blocks corresponding to non-overlapping areas of the picture, the method comprising:

selecting a group of related data blocks from the plurality of data blocks of a picture;

for each data block in the selected group, obtaining a corresponding block motion vector from a previously processed picture in the moving pictures sequence;

determining a plurality of global motion vectors for the selected group, each of the global motion vectors being formed from a plurality of the corresponding block motion vectors;

analyzing the global motion vectors and determining a metric representing a distribution pattern thereof;

selecting a motion estimator scheme on the basis of the distribution pattern metric, the motion estimator scheme being selected from amongst a plurality of motion estimator schemes each having a different combination of search strategy and number of global motion vectors;

performing data block-matching with a reference picture using the selected motion estimator scheme to generate a block motion vector; and

encoding the picture data including the block motion vectors.

9. (Original) A method as claimed in claim 8 including a step of determining, at the end of processing of a particular picture, a maximum search range using the all of the global motion vectors determined for the picture, and selecting a variable length coding scheme in accordance with the maximum search range for encoding the block motion vectors for the picture.

10. (Previously Presented) A method for improved data block matching in a moving pictures encoder for encoding a sequence of pictures each comprising a plurality of data blocks, comprising the steps of:

processing at least a picture in the sequence to obtain block motion vectors for the data blocks therein with respect to a reference picture;

generating a plurality of global motion vectors for the picture, each global motion vector being generated from a plurality of block motion vectors from a respective group of related blocks in the picture;

analyzing the global motion vectors to determine a metric representing a distribution pattern thereof;

selecting a motion estimation scheme from amongst a plurality of motion estimation schemes, for data block matching of at least one subsequent picture in the sequence; and

performing data block matching of at least one subsequent picture in the sequence using the selected motion estimation scheme, said global motion vectors and preselected search window characteristics.

11. (Previously Presented) A moving pictures encoder for encoding a sequence of pictures each comprising a plurality of data blocks, including an adaptive data block matching apparatus comprising:

a global motion estimator coupled to receive block motion vectors for data blocks of a previously processed picture with respect to a reference picture for generating a plurality of global motion vectors for the picture, each global motion vector being generated from a plurality of block motion vectors from a respective group of related blocks in the picture;

a motion characteristics analyzer coupled to receive the global motion vectors from the global motion estimator for analyzing the global motion vectors to determine a metric representing a distribution pattern thereof;

a selector coupled to receive the distribution pattern metric from the motion characteristics analyzer for selecting a motion estimation scheme from amongst a plurality of motion estimation schemes, for data block matching of at least one subsequent picture in the sequence; and

a plurality of motion estimators controlled by said selector and coupled to receive said global motion vectors for performing data block matching of at least one subsequent picture in the sequence using the selected motion estimation scheme, said global motion vectors and preselected search window characteristics.

12. (Original) A moving pictures encoder as claimed in claim 11, wherein the global motion estimator includes means for determining a maximum search range on the basis of the global motion vectors.

13. (Original) A moving pictures encoder as claimed in claim 12, including a statistical coder employing variable length codes, and wherein the statistical coder is coupled to the global motion estimator to receive said maximum search range, and wherein the statistical coder selects a variable length coding scheme for block motion vectors of a picture on the basis of said maximum search range.

14. (Previously Presented) A moving pictures encoder as claimed in claim 11, wherein the global motion estimator includes:

means for classifying the block motion vectors from a selected group into a plurality of sub-groups; and

means for determining a plurality of secondary global motion vectors corresponding to the respective sub-groups from the block motion vectors classified in the respective sub-groups; wherein the selector includes:

means for selecting the primary and/or at least one of the secondary global motion vectors for use in defining one or more search windows for each block in the selected group to enable block matching with a reference picture.

15. (Previously Presented) A moving pictures encoder as claimed in claim 11, wherein at least one of the motion estimators includes:

means for determining a match between each block in the selected group and a matching-block in the one or more search windows for that block in the reference picture;

means for determining a computed motion vector between each block in the selected group and its matching block; and

means for generating a computed motion vector for each block in the picture and determining a maximum offset vector from the largest of the computed motion vectors, and

using the maximum offset vector to select a variable length coding level for the computed motion vectors for the picture.

16. (Previously Presented) A method as claimed in claim 8, wherein the determining step includes classifying the block motion vectors from the selected group into a plurality of sub-groups; and determining a plurality of secondary global motion vectors corresponding to the respective sub-groups from the block motion vectors classified in the respective sub-groups; wherein the selecting step includes:

selecting the primary and/or at least one of the secondary global motion vectors for use in defining one or more search windows for each block in the selected group to enable block matching with a reference picture.

17. (Previously Presented) A method as claimed in claim 8, further comprising:

determining a match between each block in the selected group and a matching-block in the one or more search windows for that block in the reference picture;

determining a computed motion vector between each block in the selected group and its matching block;

generating a computed motion vector for each block in the picture;

determining a maximum offset vector from the largest of the computed motion vectors; and

using the maximum offset vector to select a variable length coding level for the computed motion vectors for the picture.

18. (Previously Presented) A method as claimed in claim 10, wherein the generating step includes classifying the block motion vectors from the selected group into a plurality of sub-groups; and determining a plurality of secondary global motion vectors corresponding to the respective sub-groups from the block motion vectors classified in the respective sub-groups; wherein the selecting step includes:

selecting the primary and/or at least one of the secondary global motion vectors for use in defining one or more search windows for each block in the selected group to enable block matching with a reference picture.

19. (Previously Presented) A method as claimed in claim 10, further comprising:

determining a match between each block in the selected group and a matching-block in the one or more search windows for that block in the reference picture;

determining a computed motion vector between each block in the selected group and its matching block;

generating a computed motion vector for each block in the picture;

determining a maximum offset vector from the largest of the computed motion vectors; and

using the maximum offset vector to select a variable length coding level for the computed motion vectors for the picture.

20. (Currently Amended) A method as claimed in claim 1, wherein the step of determining the plurality of secondary global motion vectors includes:

determining initial ~~values~~ secondary global motion vectors based on the determined primary global motion vector; and

updating each secondary global motion vector based on the block motion vectors classified into the sub-group corresponding to the secondary global motion vector.

21. (New) A method as claimed in claim 1, wherein the step of determining the plurality of secondary global motion vectors includes determining initial secondary global motion vectors; wherein the classifying step includes, for each block motion vector of the selected group, comparing the block motion vector to the initial secondary global motion vectors and assigning the block motion vector to whichever one of the sub-groups corresponds to a closest secondary global motion vector of the plurality of secondary global motion vectors that is closest to the block motion vector.

22. (New) A method as claimed in claim 21, wherein the step of determining the plurality of secondary global motion vectors includes, after the assigning step, determining updated secondary global motion vectors by updating each secondary global motion vector based on the block motion vectors classified into the sub-group corresponding to the secondary global motion vector.

23. (New) A method as claimed in claim 22, wherein the classifying step includes, for each block motion vector of the selected group, comparing the block motion vector to the updated secondary global motion vectors and assigning the block motion vector to whichever one of the sub-groups corresponds to a closest updated secondary global motion vector of the updated secondary global motion vectors that is closest to the block motion vector.